

Claims

1. Force sensor (1) including a support (2) of two arms carrying an longitudinal electromechanical element (3), which electric properties are changeable by a mechanical deformation (Δx) due to a force (F);
5 characterised in that the electromechanical element is a nanostructure (3).
2. Force sensor (1) according to claim 1;
10 characterised in that the changeable electric property is the conductance.
3. Force sensor (1) according to claim 1 or 2;
characterised in that
15 the support (2) is U-shaped.
4. Force sensor (1) according to anyone of the claims 1 to 3;
characterised in that
20 each arm (2) is provided with a cusp (5), on which the nano-structure (3) is mounted.
5. Force sensor (1) according to anyone of the claims 1 to 4;
25 characterised in that an actuator is provided in order to transmit an external source to the nanostructure (3).
6. Force sensor (1) according to anyone of the claims 1 to 4;
30 characterised in that a movable mass (7, m) provided with a tip (11) is arranged between the arms (4), where the mass (7) is movable due to an acting acceleration (a) and due to the resulting force (F)
35 the tip (11) acts on the nanostructure (3).

7. Force sensor (1) according to anyone of the claims 1 to 6;

characterised in that

a second nanostructure (10) is carried by the arms (4) in

5 order to compensate environmental effects.

8. Force sensor (1) according to claim 7;

characterised in that

each arm (2) is provided with a further cusp (5), on which

10 the second nanostructure (10) is mounted.

9. Force sensor (1) according to claim 8;

characterised in that

each arm (2) is provided with an insulation (9) in order to

15 electrically separate the nanostructure (3, 10).

10. Force sensor (1) according to anyone of the claims 7 to 9;

characterised in that

20 the second nanostructure (10) is either a nanotube or a carbon nanotube or a quasi one-dimensional nanostructure.

11. Force sensor (1) according to anyone of the claims 1 to 10;

25 characterised in that

the nanostructure (3) is either a nanotube or a carbon nanotube or bor-nitride nanotubes or a quasi one-dimensional (1D) nanostructure.

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original claims 1-11 replaced by amended claims 1-10 (2 pages)]

Claims

1. Force sensor (1) including a support (2) of two arms carrying an longitudinal electromechanical element (3), whose electric properties are changeable by a mechanical deformation (Δx) due to a force (F);

characterised in that

the electromechanical element is a nanostructure (3) and an actuator is provided in order to transmit a force (F) to the nanostructure (3).

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2. Force sensor (1) according to claim 1;

characterised in that

the nanostructure (3) is either a nanotube or a carbon nanotube or bor-nitride nanotubes or a quasi one-dimensional (1D) nanostructure.

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3. Force sensor (1) according to claim 1 or 2;

characterised in that

the changeable electric property is the conductance.

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4. Force sensor (1) according to anyone of the claims 1 to 3;

characterised in that

the support (2) is U-shaped.

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5. Force sensor (1) according to anyone of the claims 1 to 4;

characterised in that

each arm (2) is provided with a cusp (5), on which the nanostructure (3) is mounted.

6. Force sensor (1) according to anyone of the claims 1 to 5;

characterised in that

a movable mass (7, m) provided with a tip (11) is arranged

5 between the arms (4), where the mass (7) is movable due to an acting acceleration (a) and due to the resulting force (F) the tip (11) acts on the nanostructure (3).

7. Force sensor (1) according to anyone of the claims 1

10 to 6;

characterised in that

a second nanostructure (10) is carried by the arms (4) in order to compensate environmental effects.

15 8. Force sensor (1) according to claim 7;

characterised in that

each arm (2) is provided with a further cusp (5), on which the second nanostructure (10) is mounted.

20 9. Force sensor (1) according to claim 8;

characterised in that

each arm (2) is provided with an insulation (9) in order to electrically separate the nanostructure (3, 10).

25 10. Force sensor (1) according to anyone of the claims 7 to 9;

characterised in that

the second nanostructure (10) is either a nanotube or a carbon nanotube or a quasi one-dimensional nanostructure.

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Statement under PCT Article 19(1)

According to the findings in the search report and the written opinion dated march 18th 2005 a new formulated set of claims 1 to 10 is filed. These amended claims 1 to 10 replace the originally filed claims 1 to 11.

There is no need to adopt the description or the drawings to the amended claims 1 to 10.

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